2019–2020 NTSB

MOST WANTED LIST OF TRANSPORTATION SAFETY IMPROVEMENTS

PIPELINE

Ensure the Safe Shipment of Hazardous Materials

What is the problem?

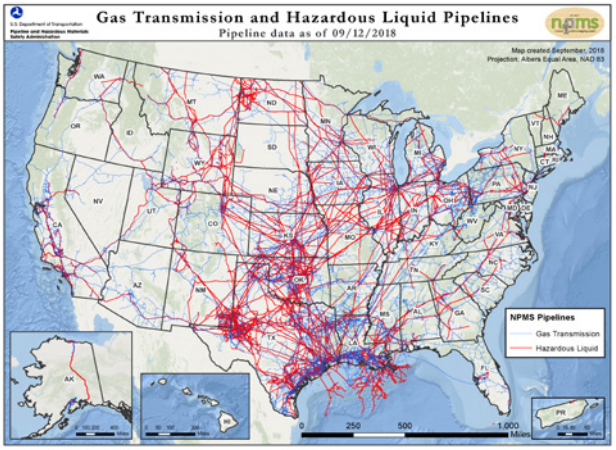
More than 2.5 million miles of pipeline (transmission and distribution lines) crisscross the nation, delivering important resources, such as natural gas, oil, and gasoline, to consumers. Pipelines are integral to our economy, providing the fuel that powers our homes and industries.

Pipelines offer a safe and efficient means of transporting commodities, but if their integrity is compromised, the hazardous materials (HAZMAT) flowing within pose a safety risk to surrounding communities and the environment. Many gas and hazardous liquid transmission and distribution lines run in or near homes and businesses. Natural gas explosions such as those that occurred in 2010 in San Bruno, California; in 2012 in Sissonville, West Virginia; and in 2018 in Merrimack Valley, Massachusetts, demonstrate the potential for loss of life and property damage when accidents happen.

Three types of pipelines—transmission, distribution, and gathering—work together to deliver products across the country. The National Pipeline Mapping System helps authorities at all levels understand pipeline locations, and supports response efforts in the event of an incident. We've found, however, that emergency responders aren't always adequately trained and knowledgeable about the pipeline systems in their area or how to mitigate the effects of a pipeline incident if it occurs.

18.4 billion
Barrels of petroleum and crude oil products delivered by pipelines in 2017
Source: AOPL

650
Pipeline incidents in 2017, resulting in 20 fatalities and 35 injuries
Source: PHMSA



On September 13, 2018, a series of explosions and fires occurred after high-pressure natural gas was released into a low-pressure gas distribution system in the northeast region of the Merrimack Valley in Massachusetts. The system over-pressure damaged 131 structures and destroyed at least 5 homes, killing 1 person and injuring 28.

Related reports:

Preliminary Report: Over-pressure of a Columbia Gas of Massachusetts Low-pressure Natural Gas Distribution System, Merrimack Valley, Massachusetts; September 13, 2018; Accident ID PLD18MR003

Preliminary Report: Natural Gas-Fueled Explosion of Residence; Dallas, Texas; February 23, 2018; Accident ID PLD18FR002

PAR-14/01: Columbia Gas Transmission Corporation Pipeline Rupture; Sissonville, West Virginia; December 11, 2012; Accident ID DCA13MP003

PAR-11/01: Pacific Gas and Electric Company Natural Gas Transmission Pipeline Rupture and Fire; San Bruno, California; September 9, 2010; Accident ID DCA10MP008

For detailed investigation reports, visit www.ntsb.gov

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What can be done?

Gaps in federal and state safety regulations must be closed, and pipeline operators must voluntarily ensure the highest level of safety for the transportation of HAZMAT through their pipelines—this includes ensuring effective pipeline integrity management programs, thorough and frequent inspections, proactive and robust maintenance to address identified hazardous conditions, and strong safety management systems. Additionally, first responders must be trained in effective HAZMAT response.

To ensure the safe shipment of hazardous materials through pipelines, the following actions should be taken:

Regulators

› Work with pipeline trade and standards organizations to modify the pipeline dent acceptance criteria to account for all the factors that lead to pipe failures caused by dents. Promulgate regulations to require that the new criteria be incorporated into integrity management programs.

› Require operators to either repair all excavated dent defects or install a local leak-detection system at each location where a dent is not repaired, continuously monitor for hydrocarbons, and promptly take corrective action to stop a detected leak.

State/Local Government

› Effectively train first responders to recognize different types of leaks and spills and respond appropriately.

› Eliminate the professional engineer licensure exemption for public utility work and require a professional engineer's seal on public utility engineering drawings (Massachusetts only).

On September 9, 2010, a 30-inch-diameter segment of an intrastate natural gas transmission pipeline ruptured in a residential area in San Bruno, California, releasing an estimated 47.6 million standard cubic feet of natural gas. The gas ignited, resulting in a fire that destroyed 38 homes and damaged 70, killing 8 people.

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MWL MOST WANTED LIST

Critical changes needed to reduce transportation accidents, injuries, and fatalities

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NTSB National Transportation Safety Board

The NTSB **MOST WANTED LIST** highlights safety issues identified from the NTSB's accident investigations to increase awareness about the issues and promote recommended safety solutions.

For more information visit **www.ntsb.gov/mostwanted** or contact **SafetyAdvocacy@ntsb.gov**

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

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